CLAIMS

WHAT IS CLAIMED IS:

1   1.   A multi- purpose media drive configured to removably receive media items and
2   exchange data therewith, said drive including at least one host port to receive thereon
3   control signals including (1) data exchange commands directing an exchange of data
4   with a media item received by the media drive and (2) the robotic device management
5   commands, the media drive also comprising a processor programmed to perform
6   operations comprising processing incoming data exchange commands by conducting
7   an exchange of data with a media item loaded to the drive and processing at least
8   some robotic device management commands by forwarding said robotic device
9   management commands to a robotic media transport device while withholding from the
10   robotic media transport device all data exchange commands received upon the host
11   port.

1   2.   The drive of claim 1, the drive being further programmed to utilize one or more
2   of the following to distinguish between data exchange commands and robotic device
3   management commands: command content, addresses to which commands are
4   directed, paths upon which commands arrive.

1   3.   The drive of claim 1, the processor programmed such that the operation of
2   forwarding said robotic device management commands to the robotic media transport
3   device comprises at least one of the following:
4   forwarding said robotic device management commands directly to the robotic
5   device;
6   forwarding said robotic device management commands to the robotic device via
7   one or more master media drives.

1   4.   The drive of claim 1, the processor being programmed to perform additional
2   operations comprising:
3   responsive to recognizing that a robotic device management command fails to
4   meet one or more predefined criteria, processing the command to the
5   exclusion of the robotic media transport device by returning an error
6   message to a host.

1   5.   A signal bearing medium tangibly embodying a program of machine-readable
2   instructions executable by a digital processing apparatus to perform operations to
3   manage a multi- purpose media drive configured to removably receive media items and
4   exchange data therewith, said drive including at least one host port to receive thereon
5   control signals including (1) data exchange commands directing an exchange of data
6   with a media item received by the media drive and (2) the robotic device management
7   commands, the operations comprising processing incoming data exchange commands
8   by conducting an exchange of data with a media item loaded to the drive and
9   processing at least some robotic device management commands by forwarding said
10   robotic device management commands to a robotic media transport device while
11   withholding from the robotic media transport device all data exchange commands
12   received upon the host port.

1   6.   A logic circuit of multiple interconnected electrically conductive elements
2   configured to perform operations to manage a multi-purpose media drive configured to
3   removably receive media items and exchange data therewith, said drive including at
4   least one host port to receive thereon control signals including (1) data exchange
5   commands directing an exchange of data with a media item received by the media
6   drive and (2) the robotic device management commands, the operations comprising
7   processing incoming data exchange commands by conducting an exchange of data
8   with a media item loaded to the drive and processing at least some robotic device

9   management commands by forwarding said robotic device management commands
10   to a robotic media transport device while withholding from the robotic media transport
11   device all data exchange commands received upon the host port.

1   7.   A multi-purpose data storage media access drive comprising a control/data port,
2   a robotic device port, and a processing unit configured to exchange data between the
3   control/data port and removable data storage media mounted to the drive responsive
4   to media access commands received upon the control/data port, the processor being
5   additionally configured to pass-through at least some media transport commands
6   received upon the control/data port to a robotic media transport device via the robotic
7   device port and withhold from the robotic device port media access commands received
8   upon the control/data port.

1   8.   The drive of claim 7, the processing unit being further configured to utilize one
2   or more of the following to distinguish between media access commands and media
3   transport commands: command content, addresses to which commands are directed,
4   paths upon which commands arrive.

1   9.   The drive of claim 7, the processor unit being configured such that the operation
2   of passing media transport commands to the robotic media transport device comprises
3   at least one of the following:
4   forwarding said media transport commands directly to the robotic media
5   transport device;
6   forwarding said media transport commands to the robotic media transport
7   device via one or more master media drives.

1   10.   The drive of claim 7, the processing unit being configured to perform additional
2   operations comprising:

3   responsive to recognizing that a media transport command fails to meet one or

4   more predefined criteria, processing the command to the exclusion of the

5   robotic media transport device by returning an error message to a host.

1   11.   A signal bearing medium tangibly embodying a program of machine-readable

2   instructions executable by a digital processing apparatus to perform operations to

3   manage a multi-purpose data storage media access drive comprising a control/data

4   port, a robotic device port, and a processing unit configured to exchange data between

5   the control/data port and removable data storage media mounted to the drive

6   responsive to media access commands received upon the control/data port, the

7   operations comprising passing-through at least some media transport commands

8   received upon the control/data port to a robotic media transport device via the robotic

9   device port and withholding from the robotic device port media access commands

10   received upon the control/data port.

1   12.   A logic circuit of multiple interconnected electrically conductive elements

2   configured to perform operations to manage a multi-purpose data storage media

3   access drive comprising a control/data port, a robotic device port, and a processing unit

4   configured to exchange data between the control/data port and removable data storage

5   media mounted to the drive responsive to media access commands received upon the

6   control/data port, the operations comprising passing-through at least some media

7   transport commands received upon the control/data port to a robotic media transport

8   device via the robotic device port and withholding from the robotic device port media

9   access commands received upon the control/data port.

1   13.   A dual purpose media drive, comprising:

2   at least one host port;

3   at least one robotic device port;

4	a media access mechanism operable to load, eject, and exchange data with
5	removable media items of predefined configuration;
6	a controller, coupled to the data/control port, robotic device port, and media
7	access mechanism, the controller programmed to perform operations to
8	process incoming signals on the host port, comprising:
9	determining whether input signals arriving on the host port comprise
10	drive-directed commands or robotic-device-directed commands;
11	responsive to a received input signal comprising a drive-directed
12	command, performing operations comprising at least one of the
13	following: conducting an exchange of data with a media item
14	received by the media access mechanism as directed by the drive-
15	directed command, transmitting status information concerning the
16	media drive upon the host port;
17	responsive to the received input signal comprising a robotic-device-
18	directed command, forwarding said command to a robotic media
19	transport device via the robotic device port.

1	14. The drive of claim 13, the controller being further programmed to utilize one or
2	more of the following to distinguish between drive-directed commands and robotic-
3	device-directed commands: command content, addresses to which commands are
4	directed, paths upon which commands arrive.

1	15. The drive of claim 13, the controller programmed such that the operation of
2	forwarding the robotic-device-directed command comprises at least one of the
3	following:
4	forwarding said robotic device command directly to the robotic device;
5	forwarding said robotic-device-directed command to the robotic media transport
6	device via one or more master media drives.

1   16.   The drive of claim 13, the controller being programmed to perform additional
2   operations comprising:
3   responsive to recognizing that a robotic-device-directed command fails to meet
4   one or more predefined criteria, processing the command to the
5   exclusion of the robotic media transport device by returning an error
6   message to a host.

1   17.   The drive of claim 13, further comprising:
2   a media map designating an extent of any predefined logical partitions
3   associated with the media drive.

4   18.   The drive of claim 13, the controller being further programmed to perform
2   operations comprising:
3   receiving instructions to restrict host access according to a predefined logical
4   partition;
5   dishonoring commands received on the host port where such commands seek
6   access to library components outside the predefined logical partition.

1   19.   A data storage library apparatus for managing a plurality of portable data storage
2   media items, comprising:
3   a robotic media transport device responsive to media transport commands to
4   transport the media items among media locations comprising media
5   storage bins and media drives;
6   one or more multi-purpose media drives, each comprising:
7   a media access mechanism configured to removably receive media items
8   and exchange data therewith;
9   at least one host port;

10   at least one robotic device port coupled to the robotic media transport
11   device;
12   a controller coupled to the media access mechanism, host port, and
13   robotic device port and programmed to perform operations
14   comprising:
15   responsive to receiving host commands upon the host port,
16   distinguishing between (1) data exchange commands
17   directing the media access mechanism to exchange data
18   with a media item, and (2) media transport commands;
19   processing received data exchange commands by performing
20   operations comprising at least one of the following:
21   directing the media access mechanism to exchange data
22   between the host port and a media item received by the
23   media access mechanism in accordance with the data
24   exchange command, returning status information
25   concerning the media drive upon the host port;
26   processing received media transport commands by forwarding
27   such commands to the robotic media transport device via
28   the robotic device port;
29   wherein at least one of the robotic media transport device and the drives is
30   programmed to restrict host access to components of the library
31   according to predefined logical partitions, each partition defining a
32   different group of one or more of the following library components: one
33   or more media items, one or more media drives, one or more media
34   storage locations.

1   20.   The apparatus of claim 19, where at least one of the robotic media transport
2   device and the drives is programmed to restrict host access to components of the

3   library according to the predefined logical partitions by instructing at least one media

4   drive to dishonor host commands that seek access to library components of a partition

5   not associated with that media drive.

1   21.   The apparatus of claim 19,

2   each media drive further comprising a media map designating an extent of any

3   predefined logical partitions associated with the media drive;

4   each media drive controller being further programmed to restrict host access

5   according to the predefined logical partition shown by the media drive's

6   media map.

1   22.   The apparatus of claim 19, where each partition is exclusively associated with

2   a different set of one or more media drives in the library, and where the robotic media

3   transport device is programmed such that the operation of restricting host access to

4   library components according to predefined logical partitions comprises:

5   for all media transport commands arriving from a particular media drive, limiting

6   host access to components of any partition associated with that media

7   drive.

1   23.   The apparatus of claim 19, where each partition is exclusively associated with

2   a different set of one or more media drives in the library, and where the robotic media

3   transport device is programmed such that the operation of restricting host access to

4   library components according to predefined logical partitions comprises:

5   dishonoring host commands that arrive via one media drive and seek access to

6   library components of a partition not associated with that media drive.

1   24.   A signal bearing medium tangibly embodying a program of machine-readable

2   instructions executable by a digital processing apparatus to perform operations to

3   manage a plurality of portable data storage media items in a data storage library that
4   includes a robotic media transport device responsive to media transport commands to
5   transport the media items among media locations comprising media storage bins and
6   media drives and one or more multi-purpose media drives, each multi-purpose media
7   drive comprising a media access mechanism configured to removably receive media
8   items and exchange data therewith, at least one host port, and a robotic device port
9   coupled to the robotic media transport device, the operations comprising:

10   responsive to receiving host commands upon the host port, distinguishing
11   between (1) data exchange commands directing the media access
12   mechanism to exchange data with a media item, and (2) media transport
13   commands;
14   processing incoming data exchange commands by performing operations
15   comprising at least one of the following: directing the media access
16   mechanism to exchange data between the host port and a media item
17   received by the media access mechanism in accordance with the data
18   exchange command, returning status information concerning the media
19   drive upon the host port;
20   processing received media transport commands by forwarding such commands
21   to the robotic media transport device via the robotic device port;
22   restricting host access to components of the library according to predefined
23   logical partitions, each partition defining a different group of one or more
24   of the following library components: one or more media items, one or
25   more media drives, one or more media storage locations.

1   25.   A logic circuit of multiple interconnected electrically conductive elements
2   configured to perform operations to manage a plurality of portable data storage media
3   items in a data storage library that includes a robotic media transport device responsive
4   to media transport commands to transport the media items among media locations

5 comprising media storage bins and media drives and one or more multi-purpose media
6 drives, each multi-purpose media drive comprising a media access mechanism
7 configured to removably receive media items and exchange data therewith, at least one
8 host port, and a robotic device port coupled to the robotic media transport device, the
9 operations comprising:
10   responsive to receiving host commands upon the host port, distinguishing
11   between (1) data exchange commands directing the media access
12   mechanism to exchange data with a media item, and (2) media transport
13   commands;
14   processing incoming data exchange commands by performing operations
15   comprising at least one of the following: directing the media access
16   mechanism to exchange data between the host port and a media item
17   received by the media access mechanism in accordance with the data
18   exchange command, returning status information concerning the media
19   drive upon the host port;
20   processing received media transport commands by forwarding such commands
21   to the robotic media transport device via the robotic device port;
22   restricting host access to components of the library according to predefined
23   logical partitions, each partition defining a different group of one or more
24   of the following library components: one or more media items, one or
25   more media drives, one or more media storage locations.

1 26.   A data storage library for managing a plurality of portable data storage media
2 items, comprising:
3   a robotic media transport device responsive to robotic-device-directed
4   commands to transport the media items among media locations
5   comprising media storage bins and multiple media drives;

6	multiple media drives, configured to removably receive media items and
7	exchange data therewith, each said drive including at least one host port
8	to receive thereon control signals including (1) drive-directed commands
9	directing an exchange of data with a media item received by the media
10	drive and (2) the robotic-device-directed commands;
11	at least one of the robotic media transport device and the drives is programmed
12	to logically partition library components among different media drives and
13	represent to hosts that the partitioned library components exist in
14	separate logical libraries.

1	27. A method of managing a data storage library that includes a plurality of portable
2	data storage media items, a robotic media transport device responsive to media
3	transport commands to transport the media items among media locations including
4	media storage bins and media drives, and one or more multi-purpose media drives
5	including a host port and a robotic device port, the method comprising operations of:
6	operating each media drive to perform operations comprising:
7	responsive to receiving host commands upon the host port,
8	distinguishing between (1) data exchange commands directing the
9	media access mechanism to exchange data with a media item,
10	and (2) media transport commands;
11	processing received data exchange commands by performing operations
12	comprising at least one of the following: directing the media
13	access mechanism to exchange data between the host port and
14	a media item received by the media access mechanism in
15	accordance with the data exchange command, returning status
16	information concerning the media drive upon the host port;

17   processing received media transport commands by forwarding such

18   commands to the robotic media transport device via the robotic

19   device port;

20   restricting host access to components of the library according to predefined

21   logical partitions, each partition defining a different group of one or more

22   of the following components: one or more media items, one or more

23   media drives, one or more media storage locations.

1   28.   The method of claim 27, where the operation of restricting host access to

2   components of the library according to the predefined logical partitions comprises:

3   the robotic media transport device instructing at least one media drive to

4   dishonor host commands seek access to library components of a partition

5   not associated with that media drive.

1   29.   The method of claim 27, where:

2   each media drive further includes a media map designating an extent of any

3   predefined logical partitions associated with the media drive;

4   the operation of restricting host access to components of the library according

5   to predefined logical partitions comprises each media drive restricting

6   host access according to the predefined logical partition shown by the

7   media drive's media map.

1   30.   The method of claim 27, where each partition is exclusively associated with a

2   different set of one or more media drives in the library, and where the operation of

3   restricting host access to library components according to predefined logical partitions

4   comprises:

5   for all media transport commands arriving from a particular media drive, limiting

6   host access components of any partition associated with that media

7   drive.

1   31.   The method of claim 27, where each partition is exclusively associated with a

2   different set of one or more media drives in the library, and where the operation of

3   restricting host access to library components according to predefined logical partitions

4   comprises:

5   dishonoring host commands that arrive via one media drive and seek access to

6   library components of a partition not associated with that media drive.

1   32.   A media drive for use in a data storage library, the drive comprising:

2   a media access mechanism;

3   at least one host port to exchange signals with one or more hosts;

4   at least one robotic device port to exchange signals with a robotic media

                    transport device;

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6   a processing unit coupled to the media access mechanism and the ports, and

7   being programmed to perform operations comprising:

8   media item loaded therein and the host port responsive to data exchange

9   commands received on the host port;

10   forwarding at least some media transport commands received on the

11   host port to the robotic media transport device;

12   restricting host access to components of the library according to

13   predefined logical partitions, each partition designating a different

14   group of one or more of the following library components: one or

15   more media items, one or more media drives, one or more media

16   storage locations.

1   33.   The media drive of claim 32 the processing unit further programmed to perform
2   operations comprising:
3   responsive to recognizing that a media transport command fails to meet one or
4   more predefined criteria, processing the command to the exclusion of the
5   robotic media transport device by returning an error message to a host.